

## **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of the Claims**

1. (Currently amended) A method of producing a molecularly-imprinted chemical detection device comprising the steps of:
  - a) modifying the surface of a solid support through the attachment of functional groups;
  - b) reacting the solid support with a derivatized molecular target to form a molecular target bound solid support;
  - c) reacting the molecular target bound solid support with at least one guest molecule thus forming a solid support stamp having a binding cavity around the molecular target;
  - d) selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate;
  - ~~d~~e) applying the solid support stamp to a surface of a~~the~~ solid substrate to attach the binding cavity to the solid substrate; and
  - ef) removing the molecular target and solid support to produce a molecularly-imprinted polymer on the surface of the solid substrate.
2. (Original) The method of claim 1 wherein the at least one guest molecule is at least one derivatized functional monomer forming at least one functional monomer recognition element around the molecular target.
3. (Original) The method of claim 2 wherein at least two functional monomer recognition elements are polymerized the form the binding cavity around the molecular target.
4. (Original) The method of claim 1 wherein the guest molecule is at least one derivatized functional polymer.
5. (Currently Amended) The method of claim 1 wherein a silicon wafer solid support is modified to facilitate the attachment in step (a).

6. (Original) The method of claim 1 wherein the surface of the solid support is modified with amino-siloxane.

7. (Previously Canceled)

8. (Previously Canceled)

9. (Previously Canceled)

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19. (Previously Canceled)

20. (Previously Canceled)

21. (Previously Canceled)

22. (Previously Withdrawn) A molecularly-imprinted chemical detection device comprising:  
a planar solid substrate

at least one molecularly-imprinted polymer imprinted on a surface of the planar solid substrate.

23.(Previously Withdrawn) The device of claim 22 wherein the solid substrate is a coated slide.

24.(Previously Withdrawn) The device of claim 23 wherein the coated slide is a coated glass slide.

25.(Previously Withdrawn) The device of claim 23 wherein the coated slide is coated in one of gold and silicon dioxide.

26.(Previously Withdrawn) The device of claim 22 wherein a surface of the planar solid substrate has an area of about 1 to 2 cm<sup>2</sup>.

27. (Previously Withdrawn) A method of detecting a chemical target using a molecularly-imprinted chemical detection device comprising the steps of:

a) exposing the molecularly-imprinted chemical detection device to the chemical target;  
and

b) directly detecting the binding of the chemical target to at least one molecularly-imprinted polymer imprinted on a surface of the molecularly-imprinted chemical detection device.

28. (Previously Withdrawn) The method of claim 27 wherein the binding of the chemical target to at least one molecularly-imprinted polymer imprinted on a surface of the molecularly-imprinted chemical detection device is directly detected using surface plasmon resonance, photonic detection, evanescent detection or cantilever detection.

29. (Previously Withdrawn) The method of claim 27, further comprising determining a concentration of chemical targets bound to the at least one molecularly-imprinted polymer imprinted on a surface of the molecularly-imprinted chemical detection device.

30. (Previously Presented) The method of claim 1 wherein the solid substrate is a coated slide.

31. (Previously Presented) The method of claim 30 wherein the coated slide is a coated glass slide.

32. (Previously Presented) The method of claim 30 wherein the coated slide is coated with one of gold and silicon dioxide.

33. (Previously Presented) The method of claim 1 wherein a plurality of binding cavities are attached to the solid substrate producing a plurality of molecularly-imprinted polymers.

34. (Previously Presented) The method of claim 33 wherein at least two different binding cavities are attached to the solid substrate producing at least two different molecularly-imprinted polymers segregated into separate areas.

35. (Previously Presented) The method of claim 1 wherein the solid support stamp is applied to a surface of a solid substrate having an area of about 1 to 2 cm<sup>2</sup>.

36. (Previously Presented) A method of producing a solid support stamp comprising the steps of:

- a) modifying the surface of a silicon wafer by attaching functional groups;
- b) reacting the silicon wafer with a derivatized molecular target to form a molecular target bound solid support; and
- c) reacting the molecular target bound solid support with at least one guest molecule thus forming a binding cavity around the molecular target.

37. (Previously Presented) The method of claim 36 wherein the at least one guest molecule is at least one derivatized functional monomer forming at least one functional monomer recognition element around the molecular target.

38. (Previously Presented) The method of claim 37 wherein at least two functional monomer recognition elements are polymerized to form the binding cavity around the molecular target.

39. (Previously Presented) The method of claim 36 wherein the guest molecule is at least one derivatized functional polymer.

40. (Currently Amended) A method of producing a molecularly-imprinted chemical detection device using a solid support stamp produced from a molecular target bound solid support, having a binding cavity around the molecular target comprising the steps of:

a) selecting an appropriate solid substrate or functional group for facilitating attachment of the binding cavity on the solid support stamp to the solid substrate;

ab) applying the solid support stamp to the surface of ~~a~~the solid substrate to attach the binding cavity to the solid substrate; and

bc) removing the molecular target bound solid support to produce a molecularly-imprinted polymer on the surface of the solid substrate.

41. (Previously Presented) The method of claim 40 wherein the solid support stamp is applied to a surface of a coated slide.

42. (Previously Presented) The method of claim 41 wherein the coated slide is a coated glass slide.

43. (Previously Presented) The method of claim 41 wherein the coated slide is coated in one of gold and silicon dioxide.

44. (Previously Presented) The method of claim 40 wherein a plurality of binding cavities are attached to the solid substrate producing a plurality of molecularly-imprinted polymers.

45. (Previously Presented) The method of claim 40 wherein at least two different binding cavities are attached to the solid substrate producing at least two different molecularly-imprinted polymers segregated into separate areas.